



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
14/649,551	06/04/2015	Seung-Su AHN	IPM20181007US	1088
66390	7590	10/13/2020	EXAMINER	
LEX IP MEISTER, PLLC 5180 PARKSTONE DRIVE, SUITE 175 CHANTILLY, VA 20151			IVEY, ELIZABETH D	
			ART UNIT	PAPER NUMBER
			1784	
			MAIL DATE	DELIVERY MODE
			10/13/2020	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE PATENT TRIAL AND APPEAL BOARD

Ex parte SEUNG-SU AHN, JE-HUN PARK, JAE-HOON KANG,
SUNG-GU LEE, and SUN-YONG AHN

Appeal 2019-006027
Application 14/649,551
Technology Center 1700

Before LINDA M. GAUDETTE, FRANCISCO C. PRATS, and
LILAN REN, *Administrative Patent Judges*.

REN, *Administrative Patent Judge*.

DECISION ON APPEAL

STATEMENT OF THE CASE

Pursuant to 35 U.S.C. § 134(a), Appellant¹ appeals from the Examiner's decision to reject claims 1 and 3–5. *See* Final Act. 3. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

¹ We use the word Appellant to refer to “applicant” as defined in 37 C.F.R. § 1.42. Appellant identifies the real party in interest as “KORLOY INC.” Appeal Br. 3.

CLAIMED SUBJECT MATTER

The claims relate “to a tool, in which a super lattice thin film having a thickness of a few nanometers to tens of nanometers is stacked in the form of A-B-C-D or A-B-C-B, having less quality variations and being capable of realizing excellent wear resistance.” Spec. ¶ 1. Claim 1, reproduced below, is illustrative of the claimed subject matter:

1. A multilayer thin film for a cutting tool, comprising:
a thin layer A;
a thin layer B;
a thin layer C; and
a thin layer D,
wherein the thin layers A, B, C, and D are laminated into a film and the laminated film is repeatedly stacked for more than twice,
wherein elastic modulus k between the thin layers A, B, C, and D satisfies relationships of,
 k_A being greater than k_s and k_o being greater than k_c , or
 k_c being greater than k_s and k_o being greater than k_A ,
wherein lattice parameters L between the thin layers A, B, C, and D satisfies relationships of,
 L_A and L_c being greater than L_s and L_o , or
 L_s and L_o being greater than L_c and L_A ,
wherein the difference between maximum and minimum values of the lattice parameter is 20% of the maximum lattice parameter value or less,
wherein the thin layers A, B, C, and D are made of Ti, Al and N and each of the thin layer is formed from $(Ti_{1-x}Al_x)_N$, wherein a lattice parameter of $(Ti_{1-x}Al_x)_N$ decreases as aluminum content increases and is obtained by $a=4.24 \text{ \AA} - 0.125x \text{ \AA}$, wherein x is a molar ratio of aluminum, or
the thin layer A is made of Cr and N or Cr, Al, Si and N, the thin layer B, C and D are made of Al, Cr and N,
wherein an average lattice parameter period λ_L of the multilayer thin film is one half of an average elastic modulus period λ_k thereof so that the elastic period and the lattice parameter period are in discord with each other.

Claims Appendix (Appeal Br. 13).

REFERENCES

The prior art references relied upon by the Examiner are:

Name	Reference	Date
Webb	US 2011/0020081 A1	Jan. 27, 2011
Chen	CN 101200797 A	Jun. 18, 2008

REJECTION

Claims 1 and 3–5 are rejected under pre-AIA 35 U.S.C. § 103(a) as obvious over Chen in view of Webb. Final Act. 3.

OPINION

The Examiner finds that Chen teaches a multilayer thin film having layers B, C, and D as recited in claim 1.² Final Act. 4. Although “Chen does not teach layer A as TiAlN,” the Examiner cites Webb which “teaches TiAlN and TiN as interchangeable materials in a cutting tool chosen based upon the desired performance properties.” *Id.* The Examiner accordingly finds that, based on the combined prior art teachings, a skilled artisan would have found it obvious “to use the stoichiometric ranges of layers B, C, and D of Chen overlapping the ranges as indicated above and to replace the TiN of Chen with TiAlN (Ti_{0.5}Al_{0.5}N) to provide better coating for heavy interruption, cooler turning and good adherence to the substrate over the TiN

² Appellant argues for the patentability of claims 1 and 3–5 as a group with claim 1 being the representative claim. *See* Appeal Br. 6–11. These claims stand or fall together. *See id.*; *see also* 37 C.F.R. § 41.37(c)(1)(iv).

of Chen which would produce layers A, B, C, and D all made of Ti, Al and N.” *Id.* Based on the structural identity, the Examiner finds that the prior art structure would exhibit identical properties/characteristics including the recited average lattice parameter period. *Id.* at 4–5.

Appellant does not dispute the Examiner’s finding of structural identity but argues that the multilayer coating of Chen exhibits a different average lattice parameter period than that recited. Appeal Br. 7. Appellant also argues that Webb does not disclose any property such as the average lattice parameter period. *Id.* at 8.

We are not persuaded first and foremost because Appellant’s argument does not structurally distinguish the prior art. It is based on the structural identity that the Examiner finds that the recited properties including the average lattice parameter period are taught. The mere recitation of a property or characteristic not disclosed by the prior art does not necessarily confer patentability to a composition. *In re Skoner*, 517 F.2d 947, 950 (CCPA 1975). Where, as here, the Examiner provides a reasonable basis for finding that the property or characteristic recited in the claims would have been inherent to the product, the burden of proof shifts to Appellant to show that this characteristic or property is not possessed by the prior art. *See In re Best*, 562 F.2d 1252, 1255 (CCPA 1977).

Moreover, “the discovery of a previously unappreciated property of a prior art composition, or of a scientific explanation for the prior art’s functioning, does not render the old composition patentably new to the discoverer.” *Atlas Powder Co. v. IRECO Inc.*, 190 F.3d 1342, 1347 (Fed. Cir. 1999). “The discovery of a new property or use of a previously known composition, even when that property and use are unobvious from the prior

art, can not impart patentability to claims to the known composition.” *In re Spada*, 911 F.2d 705, 708 (Fed. Cir. 1990).

We are not persuaded also because Appellant’s argument attacks the references Chen and Webb individually, rather than considering what the combined references would have suggested to the person of ordinary skill in the art which forms the basis of the obviousness rejection. “Non-obviousness cannot be established by attacking references individually where the rejection is based upon the teachings of a combination of references.” *In re Merck & Co.*, 800 F.2d 1091, 1097 (Fed. Cir. 1986).

Appellant next argues that paragraph 37 cited by the Examiner does not support the Examiner’s finding that TiAlN and TiN are known to be interchangeable. Appeal Br. 9. According to Appellant, although paragraph 37 of Webb discusses the various advantages of both TiAlN and TiN, the paragraph only shows that the two materials “have respective performance properties and must be selected according to the use of the coatings.” *Id.* Appellant therefore acknowledges that either TiAlN or TiN as a coating material is well known in the art. The record therefore supports the Examiner’s finding that it is within the ordinary skill to choose from these known materials for a particular coating. *See KSR Int’l Co. v. Teleflex Inc.*, 550 U.S. 398, 417 (2007) (“[I]f a technique has been used to improve one device, and a person of ordinary skill in the art would recognize that it would improve similar devices in the same way, using the technique is obvious unless its actual application is beyond his or her skill.”).

We are not persuaded by Appellant’s argument that the proposed modification would render Chen unsatisfactory for its intended purpose. As the Examiner points out, “Chen’s stated purpose is to provide a nano-

multilayer coating for cutting stainless steel having high mechanical properties such as high-temperature oxidation resistance, toughness, hardness, modulus of elasticity and breaking strength.” Final Act. 8. Appellant does not dispute this finding. *See* Appeal Br. 9. Appellant’s argument does not state what the intended purpose of Chen is and the record does not support Appellant’s position that the intended purpose of Chen is to exclude TiAlN as layer A in a multilayered coating. *See id.* In fact, Chen states that “[t]he invention introduces TiAlN with high Al content and perfect high temperature oxidation resistance into a multiple-layer coating material system” which “improves the high temperature oxidation resistance and the hardness of the coating, enhances the toughness of the coating through the microstructure optimization design and enables the coating to obtain both the high temperature oxidation resistance and excellent mechanical properties.” Chen Abstract.

Appellant’s argument that the references do not teach or suggest the recited average lattice parameter period as a result-effective variable is not persuasive because it does not address the Examiner’s findings in support of the rejection. *See* Appeal Br. 11. Contrary to Appellant’s assertion, the Examiner finds that “Chen recognizes nanolayer composition as a result effective variable that delivers mechanical properties as indicated above and optimizable as such and since lattice parameters are directly related to the composition (stoichiometry) they are therefore optimized as well to meet the claim as a result of the optimization of stoichiometry.” Final Act. 8. Appellant’s argument does not address the Examiner’s finding that a skilled artisan would have known that different compositional makeup results in different properties and such an argument is unpersuasive of reversible error.

CONCLUSION

The Examiner's rejection is affirmed.

DECISION SUMMARY

Claims Rejected	35 U.S.C. §	Reference(s)/Basis	Affirmed	Reversed
Overall Outcome:	1, 3-5	Chen, Webb	1, 3-5	

TIME PERIOD FOR RESPONSE

No time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a). *See* 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED